Working Paper #4

#4

FISHERIES AND THE STATE OF HAWAII INPUT TO THE NATIONAL FISHERIES PLAN

JOHN L. BALL, JR.
COORDINATOR, MARINE ADVISORY PROGRAM

WORKING PAPER NO. 4

February 1975

SEA GRANT COLLEGE PROGRAM

University of Hawaii
Honolulu, Hawaii

FISHERIES AND THE STATE OF HAWAII INPUT TO THE NATIONAL FISHERIES PLAN

JOHN L. BALL, JR.
COORDINATOR, MARINE ADVISORY PROGRAM

WORKING PAPER NO. 4

February 1975

SEA GRANT COLLEGE PROGRAM

University of Hawaii
Honolulu, Hawaii

This work is a result of research sponsored by NOAA Office of Sea Grant, Department of Commerce under Grant No. 04-5-158-17. The U.S. Government is authorized to produce and distribute reprints for governmental purposes notwithstanding any copyright notations that may appear hereon.

Table of Contents

Introduction

This working paper reports on the ideas which were presented at the various meetings that were held throughout the state to provide input to the National Fisheries Plan. The development of the National Fisheries Plan is being undertaken now to revitalize our commercial fishing industry, to help meet expected increases in the demand for recreational fishing opportunities, to define resource management and environmental concerns involved in fisheries and fisheries habitat protection, and to meet the growing domestic demand for abundant and wholesome fisheries products.

Six input meetings, jointly sponsored by the State of Hawaii, Division of Fish and Game, the National Marine Fisheries Service, and the Sea Grant Marine Advisory Program, were held to provide interested persons the opportunity to present problems, and to make suggestions that they thought should be incorporated in a National Fisheries Plan. The meetings were held between November 12, 1974 and December 3, 1974. The meeting locations were Kaunakakai, Wailuku, Kailua-Kona, Hilo, Lihue, and Honolulu. They were well attended and 158 people signed attendence lists. Commercial and sports fishermen, conservationists, government officials, consumers, representatives of the news media, students, charter fishing spokesmen, fish buyers, and other commercial interests associated with the marine environment attended the various meetings.

The format of the meetings included a brief introduction to the need and hopes for the National Fisheries Plan. The rest of the meeting time was devoted to receiving input on the significant problems faced by people in relationship to the commercial, recreational, aesthetic, consumptive uses of the sea. Representatives of the sponsoring agencies attempted to record each problem or idea that was presented. These lists for each meeting were then sent to the participants for their review and correction in the event of error.

While follow-up regional meetings were held in several west coast locations under the auspices of the Pacific Marine Fisheries Commission, a similar opportunity did not present itself for Hawaii to obtain a sense of consensus following the input meetings. So while such an activity might contribute to the solution of local problems and a more refined output for national concerns, the lack of participation of the State of Hawaii in the Pacific Marine Fisheries Commission and limited local resources did not allow an over-all evaluation and prioritization of issues.

Recognizing this qualification, it was determined that this paper should follow a straight-forward presentation organized along the following lines. It was decided that an overview to the local scene was necessary. Robert T.B. Iversen volunteered to develop an overview and gather together related information which would enable the reader to more quickly and completely comprehend the complex issues in Hawaii's fisheries.

After several starts in different directions, we decided that the most accurate and informative way to present the comments, problems, and ideas that came from the input meetings, was to organize the input as best we could under the twenty-three issues that are reviewed in the Summary of the Draft of the National Fisheries Plan. Furthermore, it was felt that the comments by participants should be available somewhere in the text with a minimal of

editorial comment. Therefore, after each issue are lists of all of the comments, problems, and ideas as they came from the participants. An attempt was made to give some idea of the frequency or commonality to these problems by indicating, with a numbering code, the meeting(s) at which the particular item was brought up. The code followed the order of the meetings so that the comments from the Molokai meeting are followed by the number 1. Other meetings in their order are Wailuku - 2, Kailua-Kona - 3, Hilo - 4, Lihue - 5, and Honolulu - 6.

We felt that some additional language should follow the lists of comments under each issue. This language is not that of the participants. So while it attempts to summarize for each issue, it may contain "connective and editorial comments" that were not uttered in precisely these same words by participants. However, in trying to round up all of the comments, it was felt that some attempt should be made to connect the many facets of the problems. There was no intention to interject priorities and value judgements in this section, but the reader is reminded to avoid obtaining any sense of consensus based on this language.

Some additional information is presented in the appendices of the paper. These provide extra insight to a number of related matters.

While this paper is the product of a short timeframe and therefore contains all the errors inherent a "quick and dirty" effort, it nevertheless represents a lot of help and input from a good number of people. Specifically, Michio Takata, Kenji Ego, Henry Sakuda, Eric Onizuka, and others including several neighbor island staff members of the Division of Fish and Game contributed their time and enthusiasm. Robert T.B. Iversen of the National Marine Fisheries Service took a lion's share of the responsibility. Members of the Sea Grant staff included Rose Pfund and Richard Morgan.

This paper represents input from many interested citizens who took the time to attend meetings and review materials. What comes of this effort is to their credit, and from the entire fishing community; Mahalo!

An Overview:

Fisheries and the State of Hawaii

With its 1,052 miles of tidal shoreline, 2,000 commercial fishermen, over 1,000 commercial fishing vessels and boats, over 122,000 recreational fishermen out of a population of over 800,000, a per capita fish consumption that is probably twice the national average of 12.6 pounds per person, over 12,000 documented or registered vessels and boats of all descriptions, Hawaii is an ocean-oriented State that has undergone spectacular development in recent years.

Hawaii's population has grown from 422,770 in 1940 to 499,794 in 1950, 632,772 in 1960, 769,913 in 1970 and an estimated 846,869 in 1974. Economic growth has surpassed population growth during the same period. Hawaii's Gross State Product (GSP) in 1940 was $298.6 million. By 1972 the GSP had reached $4,731.8 million.

Growth of its fisheries, however, has not kept pace with its population and general economic growth. During post-WW II years (1948-74), commercial fish landings have fluctuated between 10 and 20 million pounds per year, with average yearly landings of 14.6 million pounds. Commercial fish landings are dominated by catches of tunas, which account for 81 percent of State landings. One species, skipjack tuna (aku), accounts for 67 percent of total State landings.

Catches by recreational fishermen have undoubtedly increased, but due to the lack of recreational catch data, the amount of presumed increase is largely a topic of speculation. Based on the general complaints of recreational fishermen, it seems unlikely the increase has matched the rate of population growth.

Even though the value of landings has increased, the portion of the GSP represented by these landings has shown a steady decline. In 1948, the value of fish landings was 5/10's of one percent of the GSP. By 1972, the landings were only 1/10 of one percent of the GSP, even though the value of the landings increased by 40 percent. There are indications the value of recreational fisheries may be greater than commercial fish landings. In a 1972 report, based on data collected between 1968-1971, the only years for which data are available, recreational fishing expenditures were about 3.5 times as great as the value of commercial fish landings for 1971.

Hawaii's overall development has brought with it the usual catalog of problems faced by any rapidly expanding population and economy. These are particularly applicable to Hawaii since it is a State where most of the development takes place along the shoreline or in very close proximity to the shoreline. Pollution, lack of access to beaches and other shoreline areas for recreational fishermen, loss of fish habitat, overcrowding of harbor facilities, conflicts between recreational fishermen and commercial fishermen for the same resources -- all these and more must be resolved in order to optimize the value of Hawaii's fisheries resources for the future.

The State of Hawaii's administration has recently favored a policy of selected growth for the State as a whole, thereby acknowledging the fact that Hawaii's resources are finite. Some resources, such as fisheries, have biologically imposed upper limits of development. Aquaculture may be an exception here.

The fact that 81 percent of Hawaii's commercial landings are based on high seas tuna fishing may indicate the future thrust of the State's fishery development will occur in large measure by expanding the fleet's harvesting these resources and the markets serving them, while at the same time developing new fishing grounds. Also, the inshore and nearshore fishermen, both recreational and commercial, can be expected to further their use of the resources either through new technology or through utilization of new fishing grounds, such as the Leeward Islands of the Hawaiian Archipelago, which encompass as much nearshore fishing grounds as do the main Hawaiian Islands.

The word "optimize" is receiving greater and greater attention in describing the management of fishery resources. As pointed out in the Draft Outline for the National Fisheries Plan, the word optimize ". . . is used to acknowledge that the different values of the resources sometimes compete with each other, and that a plan must address the question of proper mix of uses rather than a simple maximizing of each."

The resources. There are about 680 species of fish currently known from Hawaiian waters and a lesser number of shellfish which form the base of Hawaii's fishery resources. However, commercial landings are made up primarily of 57 species of fish and 12 species of shellfish, and of these, a few species comprise the bulk of the landings. For example, in the fiscal year ending June 30, 1974, skipjack tuna comprised 10,261,257 pounds, other species of tuna - 1,460,146 pounds; big-eyed scad (akule and hahalalu) - 637,739 pounds; opakapaka and other snappers - 288,085 pounds; mackerel scad (opelu) - 190,144 pounds; striped marlin - 169,255 pounds; and dolphin (mahimahi) - 113,848 pounds. All other fish landings were under 100,000 pounds per species. The highest shellfish landings were Kona crabs at 40,552 pounds.

Compared to the rest of the United States, in 1973 these landings placed Hawaii twenty-second among the 50 states in the weight with 7,026 tons and twentieth in the value of its catch ($6.1 million). In contrast, Louisiana was first in weight (517,979 tons) and Alaska was first in value ($162.1 million). However, much of the resources that are within range of part of Hawaii's existing High seas fleet are being caught by foreign longline fishermen. Further, most fishery scientists feel that the skipjack tuna resources in the central Pacific are underutilized. At present, about 350,000 - 400,000 tons of skipjack per year are caught in the Pacific. It is likely this catch can be doubled without overfishing the stocks. Expansion of Hawaii's pole and line fishing fleet for skipjack tuna will to a large measure require the production of live bait which is hardy enough to withstand longer trips to the fishing grounds and which is as effective as the anchovy (nehu) presently used as live bait. Possible sources of such bait are the northern anchovy from California or the culture of other species in Hawaii using specialized aquaculture techniques.

A larger fleet based in Hawaii might be able to take advantage of these stocks. However, the hundreds of west coast based tuna vessels may be adversely affected by the adoption of a 200-mile economic fishery zone as has been proposed by the Law of the Sea Conference (LOSC). Should the LOSC adopt a 200-mile zone, Hawaii can expect competition for central Pacific resources from these fishermen. In the past few months, five west coast vessels have arrived in Hawaii to prospect for new grounds and others are reported interested in coming.

The Leeward Hawaiian Islands represent a major possible expansion of Hawaii's fishery resources. These islands extend from Nihoa Island, just northwest of Kauai to Kure (Ocean) Island, a distance of about 1,100 miles. These islands have only 3 square miles of land area and only 25 miles of tidal shoreline, but their nearshore fishing grounds, up to 100 fathoms, because of the banks in the vicinity, are twice the area of the nearshore fishing grounds around the main Hawaiian Islands. At the present time, the future management of these fishery resources is being discussed by the State of Hawaii and the Federal Government (Dept. of the Interior) as to the control of the nearshore fishery resources. At present, these islands (except Midway, Kure, and Tern Islands) form the Hawaiian Islands National Wildlife Refuge and they have been proposed for wilderness designation. Hawaii and the Sea, 1974, published by the State of Hawaii, has called for an investigation of these resources before any further action is taken, and a joint investigation between Federal and State agencies is scheduled to commence in the summer of 1975. Midway Island, one of this chain, is not part of the State of Hawaii (it is a U.S. Navy station), but it is in a possible position to help support U.S. entry into the fishery for albacore tuna which occurs in waters north and east of Midway. Small U.S. albacore trollers are already fishing 1,200 miles west of the mainland to intercept the albacore en route to California and Oregon, and it has been proposed they fish even further west to increase the duration of the fishery. Midway Island is a logical support base.

Oddly enough, Japanese high seas fishermen have the right to engage in long line fishing for yellow fin and big eye tuna (ahi) - but not pole and line fishing for skipjack tuna (aku) - under certain conditions within the U.S. Contiguous Fishery Zone of the Leeward Hawaiian Isles (3-12 miles off shore). This is due to a little known part of the Japan-United States bi-lateral fisheries agreement signed in Tokyo in December 1974.

Another resource which probably occurs in deep waters around the Leeward Islands is precious coral. Foreign fishermen are already harvesting these corals on Milwaukee Bank, near Midway Island.

Commercial harvest and processing. Details of the annual commercial fishery landings and the number of fishermen and vessels from 1948 to 1974 are given in appendix table B. Overall landings have remained between 10 and 20 million pounds per year, while the number of fishermen and vessels and boats was high in the late 40's and early 50's and declined to a low in the middle and late 60's, in recent years it has begun to rise again. The recent rise may indicate a resurgence of interest by small boat fishermen (i.e., using boats under 5 net tons, or 31 feet long). It also indicates improvement in efficiency by the skipjack tuna fleet, whose numbers have declined from 28 in 1951 to 16 in 1974.

Hawaii's commercial fishing industry thus represents a small portion of the State's total economic activity and employs a very small portion of the labor force. Importation of foreign caught fishery products for processing in Hawaii is necessary. For example, Bumble Bee Seafoods, Inc., the State's only tuna cannery, is forced to import a substantial portion of its yearly pack in order to maintain production at a reasonable level. Processing of other fishery products, such as imported fish into kamaboko (fishcake), is minor in Hawaii in terms of dollars and employment compared to the State's overall economy.

Expansion of the State's fleet of small commercial fishing vessels is hampered in part by the lack of financing available to fishermen. Even skilled fishermen that are consistent producers encounter trouble because of lack of knowledge of elementary business procedures, or failure to establish their catch records through incomplete catch reports or tardiness in filing. Also, the cost of shipyard repairs has risen rapidly in recent years. It has been estimated by one industry official that the cost of repairs in Hawaii has risen about 54 percent since 1970, or 13.5 percent per year. Costs of fuel, a major expenditure by fishermen, have also risen sharply due to the energy crisis.

In many sections of the mainland United States, fishery cooperatives have proven useful in expanding markets available to fishermen and in stabilizing ex-vessel prices received by fishermen. In Hawaii, a few fishermen are interested in cooperatives, but among fishermen there does not appear to be widespread grass-roots interest in cooperatives.

Marine recreation. Utilization of fishery resources by recreational fishermen, as mentioned previously, can be expected to increase rapidly in the years ahead, following general U.S. projections. It has been estimated that between 1970 and 1985 the number of U.S. marine anglers will increase from 60 to 100 percent. A survey made on Oahu in 1968 and 1969 and on the neighbor islands in 1970 and 1971 estimated there were 122,400 recreational fishermen in the State. There were 92,500 on Oahu, 12,300 on Hawaii, 10,600 in Maui County, and 7,000 on Kauai. Assuming Hawaii follows national trend estimates, the number of recreational fishermen in the State should be between 195,840 and 244,800 by 1985.

The magnitude of the recreational fishing catch is poorly known, which seriously hampers effective management of the fishery resources in general. In addition, both recreational fishermen and commercial fishermen often fish for the same species (e.g., snappers). Recreational fishermen are also hampered by the lack of access to shoreline fishing grounds due to development. In some cases where development has not occurred, access is difficult because there are no rights of way. Sometimes landowners,because of liability problems, are reluctant to grant access.

Traditionally, Hawaii's marine anglers have been reluctant to agree with the idea of a salt water fishing license, although the State does have a fresh water fishing license for some areas. At one time there was a salt water fishing license, but it was repealed by the State Legislature in 1949. Establishment of a salt water license system is again being urged by some fisheries scientists. Proponents

state that a salt water fishing license would provide statistics on numbers of fishermen and on the variety and magnitude of catch which are necessary for the rational management of all Hawaii's fishery resources.

Agencies supporting fisheries programs in Hawaii. A variety of State, Federal, and privately funded agencies are carrying out programs aimed at Hawaii's fisheries. Among these are the Hawaii State Division of Fish and Game, Dept. of Land and Natural Resources; University of Hawaii Institute of Marine Biology, which specializes in aquaculture research; National Marine Fisheries Service, National Oceanic and Atmospheric Administration, which specializes in high seas and nearshore commercial and recreational fisheries; Oceanic Institute, also specializing in aquaculture; and the recently established International Center for Living Aquatic Resource Management (ICLARM), which has its headquarters in Honolulu. ICLARM is funded by the Rockefeller Foundation. The University of Hawaii's Sea Grant Marine Advisory Program also provides information to fishermen.

Citizen Input and Editorial Summaries on NFP Issues

Issue 1. Improve the Organization of Fisheries Management

Meeting Participants Comments:

1. The State should develop an over-all fisheries plan. (1,6)

2. State fishing regulations and laws need to be reviewed and fishermen should be included in the review. (1,5)

3. More input should come from the fishermen in the form of state-wide boards and the like. (1,4)

4. Fishing agencies should avoid local duplications. (1,2)

5. Fishermen would like to see more direct support of commercial operations by means of information and applied research. (2)

6. Fishermen would like to have specific agency representatives that they can count on. (4)

7. The University should take a more active role in the applied marine problems of the marine community. (4)

8. More local people should be incorporated in the various agencies, both in terms of hiring and working relationships. (4)

9. Fishermen and others interested in similar issues need to get organized and work together. (1,5)

10. For reasons of management and organization, lists of the fishermen of Hawaii should be compiled. These lists should include both commercial and sports fishermen. (5)

Editorial Summary:

One of the first needs that is felt at the local level is the need for the state of Hawaii to develop a coherent fisheries plan. Such a plan should mesh with the National Fisheries Plan providing a framework within which the national programs can play their most effective part. The local plan should also pinpoint those areas of fiscal and management responsibility that are within the state of Hawaii's purview. Furthermore, it should be a plan that begins to outline the responsibilities of local industry, recreational groups, and the general public. In the same manner that the Hawaii participants felt that the National Fisheries Plan should be reviewed every now and then, a State Fisheries Plan should contain provisions for review and refinement on a periodic basis.

At the outset, there were a number of specific problems that the participants felt should have immediate attention. One of these regards the laws and regulations that govern or support fishing in Hawaii. Many of the participants pointed out inconsistencies in the regulations.

Other problems involved the need for better information for management and for a better public understanding of the physical, biological, and social factors involved in resource management. Inconsistency between state and federal laws needs to be resolved.

Future regulations should have direct input from the fishermen and other interested parties. It was felt that there are significant differences, and even rights, from island to island that should also be reflected in state regulations. To make more of these needs known, more fishermen should be involved in the input processes in an advisory capacity. These fishermem should be selected and approved by the "membership." All of this supposes more organization and identification than now exists, but a step in the right direction might be to maintain lists of the different types of fishermen.

Another topic of interest to the fishing community is increasing the level of cooperation between sports as well as commercial fishermen and the various governmental activities involved with the fisheries resources. The participants felt that the close cooperation that seems to exist in the Japanese and Russian fishing efforts would be nice to see in this country. This means more communication, cooperation, and coordination on the part of everyone involved in fishing. Fishermen would be required to supply information on their activities at the same time the government attempted to work on more of the day to day problems which fishermen face.

On the governmental side of this program, the participants felt that the University should get more involved in the applied marine problems, that existing overlapping programs should be eliminated or better coordinated, and that field representatives should be available to help solve problems and provide information. It was felt that more local people should be on the staffs of these activities.

The participants were unanimous in their hope that the National Fisheries Plan would be carried through. They felt that priorities change with time and that, periodically, the National Fisheries Plan should be reviewed. While the solution of fisheries problems in most of the rest of the country will necessarily involve a greater complexity of bilateral and regional cooperation between a host of state and federal agencies and the fishing community, Hawaii's situation is much more straightforward. However, there are still questions as to which level of government should be responsible for work and/or support.

Issue 2. Improve Management of International Fisheries

Meeting Participants' Comments:

1. The United States should seek, and enforce, a 200 mile contiguous fisheries zone. (1,2,3,5,6)

2. The management system for the 200 mile zone needs to be developed soon. (2)

3. Although foreign fishing within the current fisheries limits is generally not a problem at this time, there is certainly some fishing within the projected 200 mile limit. (2,3)

4. In the past, United States aid to foreign fisheries has contributed to the competitive forces faced by American fishermen. (5)

Editorial Summary:

The subject of extended jurisdiction to 200 miles came up at almost every meeting. Despite the fact that conflicts with foreign fleets are not the same problem in Hawaii that they are in other waters, our fishermen are in favor of a 200-mile contiguous fisheries zone. Immediately, questions came up regarding how this area would be managed and what group would be responsible for its regulation. Many felt that the scientific base was weak and should be strengthened.

Less direct issues are involved in some of the trade-offs that seem to be indicated under the new Law of the Sea ideas. One of these involves U.S. support and development of the fishing fleets of other countries which become marketplace and high seas competitors of our own fishermen. It was felt that we should examine these arrangements for their long-term impact.

In Hawaii, the primary impact of an extended fisheries zone will be in the area of commercial pelagic fisheries. The impact on sports fishing is uncertain although there is a vague feeling that more fish may become available to sports fishermen.

An important question regarding these new limits is whether the U.S. fishing fleet can take advantage of the new resource base. If this is a potential outcome and the 200-mile limits are to provide a steppingstone for a revitalized and aggressive fishing industry, then the national and state plans must anticipate these needs.

Issue 3. Improve Management of Anadromous Fisheries

(There are no anadromous fisheries of commercial importance in Hawaii and no discussion of the anadromous fisheries of other areas occurred at any of the Hawaii meetings.)

Editorial Summary:

There are no anadromous fisheries of commercial importance in Hawaii.

Issue 4. Improve and Extend Management of Coastal Fisheries

Meeting Participants' Comments:

1. The State needs a coastal fisheries resource management program designed to improve the availability of fish. (1,2)

2. A fisheries biologist from the Division of Fish and Game should be stationed on each neighbor island. (1)

3. Sabbatical leaves for fisheries management personnel would improve their effectiveness. (1,2)

4. The State's Division of Fish and Game, Enforcement Branch is understaffed and therefore limited in its effectiveness. This situation should be corrected. (1,2,3,4,5,6)

5. The existing laws and regulations do not always appear to be based upon biological information and studies. More studies should be funded and done. (1)

6. If field research and other activities of the agencies engaged in fisheries related work were staged and carried out from different locations on the neighbor islands, this would have the effect of giving much more effective contact between the fishermen and the groups which support them. (1)

7. Better reporting of commercial catches is needed for management. (2,3,6)

8. Over-fishing is a definite problem in our coastal fisheries. (2)

9. Fisheries resource surveys of the Leeward Islands are needed. (4)

10. The potential and ramifications of legalizing the sale of speared fish needs to be carefully considered. (1,5)

11. Fish, such as akule, which are held in net enclosures as a part of the routine marketing practices, should be the subject of a study that would establish some guidelines on the number of days these fish can be held without losing quality and/or excessive numbers of fish through starvation and injury. (5)

12. The environmental impact of illegal practices should be documented so that an educational program can be developed to accompany stricter enforcement. (5)

13. The agencies engaged in fisheries related work should improve their communication. Information, regulations, and the like are not widely enough disseminated. (6)

14. All fishermen should be licensed. Sports as well as commercial fishermen. (6)

15. The fines and other penalties levied by the courts against fishing violators are not stiff enough to serve as an effective deterent. (5,6)

16. There need to be changes in the deputy warden system. (6)

Editorial Summary:

At each of the National Fisheries Plan (NFP) meetings, there was the feeling that our inshore and bottom fish resources are in poor condition. Hawaii's citizens have observed a gradual, but persistent, decline in their fishery. This decline has been due to a great number of causes including:

a. Over-fishing
b. Environmental degradation
c. Habitat and nursery ground destruction
d. Destructive and harmful fishing methods
e. Poor enforcement of fishing laws and regulations
f. Poor conservation ethics and the lack of a public commitment to the ocean
g. Perhaps a long-term decline in the relative economic productivities of marine activities as compared with land activities

Generally, Hawaii's people believe that an active program can enhance the productivity of our inshore fisheries. However, it is doubtful that appropriate governmental agencies possess the needed management information to create a feasible system at this time. Likewise, the general public does not comprehend the implications of such a system, nor of the many pieces that are commonly held to be effective. Therefore, while we may desire to have some sort of comprehensive plan, the processess of government to date, including this series of meetings, have not resulted in the complete consideration of the complexities of the issues involved.

In the meantime, we must either start the process or decide that the job is too complex or politically sensitive. Those who attended the NFP input meetings thought that it was possible to begin the process. They recognized that a "final" plan will never be achieved and look for an evolutionary process that uses the best input and information available for the start. Succeeding plans should incorporate new ideas and information.

The fishing community and the general public need more information on fisheries matters. It was felt that the national and local plan should call for a strengthening of the educational and informational aspects of the various governmental programs concerned with fisheries resources.

Another area where the management of fisheries could be improved is in providing additional training opportunities for management personnel. The participants throught that sabbatical leaves should be a regular part of the career of resource managers. Likewise, the fishing community needs better and more timely information if good management is going to be successful.

The participants felt that laws and regulations concerning fishing are being ignored and violated too often; this is a major problem in the management of coastal fisheries. They saw two ways in which this situation could be improved. The most immediate would be to provide for a larger and more aggressive enforcement staff within the State Fish and Game Division. Secondly, education and public information would also help. Without legal restraint and without an understanding of the conservation intent of the laws and regulations, Hawaii's resources will continue to decline for many of the reasons on the previous page.

Another part of the same problem involves the courts. Almost without exception, the courts have been so lenient on offenders that arrests are almost no deterent to violations. In effect, the courts have assumed the role of resource managers through their treatment and handling of fishing violations cases. In this regard, their fines are considered too light and their understanding of the biological processes too poor to make prudent decisions. Therefore, the courts have been encouraged to re-examine the effects their decisions are having on resource management and to avail themselves of some additional education in biological processes.

Now, and in the future, there is need for occasions to examine the impact of existing regulations upon the resource. The required changes involve everything from regulations, which are incapable of preventing illegal and/or destructive fishing, to allocations of fish between different users. In addition, new fishing methods will need to be evaluated and some of the old ones changed or eliminated as times and priorities change. These potential changes can come about if the resources are being over-fished and if there are changes in who can use the fishery.

Issue 5. Improve the Scientific Basis for Fisheries Management

Meeting Participants' Comments:

1. Resource surveys are needed to document the status, and provide additional management information, on mullet, akule, kumu, awa, menpache, and oio. Also new species introductions need better assessments. (1,3,5,6)

2. Limits on the commercial harvest of akule may be necessary. Fishery methods, such as low flying planes cause problems. (1,5)

3. Resource surveys are needed to document the status, and provide additional management information, on opihi, lobster, and Kona crab. (1,3,4,5)

4. Resource surveys are needed on snappers, weke, and kumu. There is a feeling that these species may be in trouble from over fishing. (3,5)

5. Overfishing of reef resources, and resources such as opihi, need some control so that we can maximize our return from the sea. (4)

6. Halalu may need a sanctuary where they cannot be caught. (5)

7. The harvest of precious coral should be on a sustained yield basis. (6)

8. The harvest of "white coral" (coral heads) needs some management. Study on growth rates should be continued. (6)

9. Harvest rates, growth and reproduction, and environmental impact of shelling needs some immediate attention. (6)

10. Some population management system for porpoises may need to be developed. (4)

11. Endangered marine species should receive more attention. These species include several marine turtles. (5)

12. A hatchery and stocking program should be operated for the sea turtles that we have, or have had, in Hawaii. (Greens and Hawksbills). (5)

13. The o'opu as a fresh water species with commercial interest should receive more attention and other management. (5)

14. Fishing around the mouths of rivers and streams should be prohibited. (Maybe this should include throw-netting from bridges.) (6)

15. There is a need for a study of spearfishing as a commercial means of taking fish. (1,6)

16. We should be careful not to develop a large scale technology where the resources might not be able to take heavy fishing pressure. (6)

17. Special care and study need to be given to the spawning seasons of inshore fishes that are likely to be caught in nets. Net fishing by sportsmen (and commercial fishermen) might be regulated to protect spawners. These species include moi, mullet, oio, and others. (5)

18. The tropical fish resource needs more study, and in the opinion of many, it already needs immediate protection and management. There is a view that without controlling demand nationally, we will be able to do very little about our own resources. The idea of allowing only the export of those fish which we can culture was presented. (Right now, this would mean no export at all since we cannot now culture, in any large scale sense, any of these fishes.) (3,4)

19. Resource surveys on the Leeward Islands are needed to develop fishing plans and a management scheme. The interests of endangered species must also be taken into account. Some feel control should rest with the State. (3,4,6)

20. More information on the fisheries resources of the South Pacific would be useful. (6)

21. There is a general interest in resource surveys for management, whether the goal is fishing or parks. (4)

22. There is a startling contrast between the exploited resources of Puako which has easy access, and the variety and abundance of fish in the more remote sections of North Kohala. These differences should provide some insight for parks and other shoreline management programs. (4)

23. The National Marine Fisheries Service should become more involved in in-shore resources. (6)

24. Too much money has gone into aku research compared to other fishery resources. More federal, as well as state, money should go into inshore and bottom fish resources. Specifically, ahi migration, the seasonality of opakapaka, and shellfish resources. (2)

25. Some say more laws are needed to preserve resources around Hawaii. Others say we have too many already. (6)

26. Ways must be found to record the knowledge of experienced fishermen.

27. Management decisions are sometimes made on too little data. Better assessments should be done before the introduction of new species. (1,6)

28. An education and information program needs to be a part of the management program. (5)

29. Samoan crab populations have changed in their abundance. (5)

Editorial Summary:

There was a general feeling that too many of our fisheries laws and regulations are made without enough biological or social information. The participants felt that a concerted effort should be made to support resource surveys on several of the most important commercial and recreational stocks of fish. These include the tuna and other pelagic species, as well as important inshore species. These surveys should be strictly management oriented and focus on the species should be from a conservation and resource use point of view. It was felt that the National Marine Fisheries Service should become more involved in inshore work as well as in the work they are locally doing with tuna.

The Leeward Islands of the Hawaiian achin, which are under the control of the U.S. Bureau of Sports Fisheries and Wildlife, are seen as having considerable fisheries potential. Currently, there is a great deal of uncertainty as to the legal boundaries, the future management regime, and the fisheries potential of this area which is now essentially only a wildlife preserve. There are a number of species of animals in the Leeward Islands which are extremely rare and resource surveys and subsequent fisheries schemes must take this into consideration. However, Hawaii's fishermen are very interested in having resource surveys done and the fishery potential evaluated. This must precede a fisheries plan for the area, so this is a high priority item.

Resource surveys for the Hawaii area in general should provide useable information on the location and migration of yellow fin tuna, the apparent seasonality of our snapper resources, the potential stocks of underutilized shellfish, as well as the information needed to predict the abundance and distribution of the important pelagic species.

There is a pressing need for management information for the regulation of critical inshore resources. Many of the participants felt that more money should be spent on inshore stocks, even if it means less on the pelagic, offshore stocks. There was also a feeling that, as this information develops, it should be incorporated into educational programs aimed at public understanding of the resources and of the required management regulations.

Also needed is management information which will document the impact of fishing methods which may, or may not, now be legal. These include the need to document the impact of current techniques which include chloroxing and gassing holes to remove fish and spearing fish for commercial purposes. There are biological and social aspects involved in many of these issues. A related issue is the taking of juvenile mullet, which is one of the culturally preferred ways to utilize this resource.

Therefore, it was felt that one of the prime goals of scientific management should be to supply sufficient information to allow a solid program of conservation to be developed for all of the citizens of Hawaii. At the heart of such a program should be information on life histories, population dynamics, social and cultural importances, and conservation ethics.

Marine tropical fishes and a number of corals have recently become rather important economic resources. There was a definite feeling that we do not have enough information to adequately manage and protect these resources. Consequently, there was a wide range of actions that participants thought were needed to guide the sane, economic utilization of these resources. Several studies are now under way to give us better information on growth rates, fecundity, and harvesting guidelines. These were felt to be valuable and they should continue.

Shells also have recently become an important resource. Although the economic impact of shell collecting and sales is not known, the populations in the general neighborhood of the major population centers are receiving heavy pressure from commercial and recreational collectors for shells. The participants expressed concern over the fate of the individual stocks of shells and the effect that "want" on shelling has on the marine environment in general. These concerns are apparent to many of the collectors themselves. Some outside information on biology, accompanied by a good education program, may help ease the proglem.

Another part of proper scientific management is to develop the sort of information that will allow the effect of different regulations to be predicted ahead of time. There are some critical questions here that involve everything from gear to cultural patterns. Seasons, size limits, methods, uses, and the like are all areas which need to be approached with

sound information. There are many ideas among the fishing public which whould be considered. Indeed, fishermen are anxious to be a party to these decisions in a more direct way than they are now.

There should be good coordination between the various agencies that are developing gear and methods and those who have the responsibility to manage public resources. We need to know the ability of particular resources to take additional commercial or recreational fishing pressure and not create additional problems by encouraging fishing pressure on over-harvested resources.

There is a general feeling that we need to be reasonably careful about future introductions of new animal species. We should be certain that new species will not displace valuable commercial or recreational species.

Hawaii's fishing community is also concerned about the fate of our endangered marine species. More research effort should be given this area. It is also felt that active programs may be in order for some species such as the sea turtles. Many feel that a hatchery and stocking program would increase the number of these animals and, therefore, their chances for survival and their contribution to the food resources of Hawaii.

Other issues where the participants felt that we lacked knowledge concerned the environmental, economic, and social impact of manganese mining and refining in, or around, Hawaii. There is a great potential resource in nodules and crusts on the seafloor and there was a question on the direct impact of mining, as well as the inshore impact near refining centers. Together with the economic and social impact on the state as a whole, many felt that this should take on special priority although it is only partly a fisheries problem.

Issue 6. Develop Methods for Equitable Allocation of Fisheries

Meeting Participants' Comments:

1. Molokai people are concerned about the waste in large scale akule harvesting methods, and about the share of the resource that is rightly theirs as opposed to "outsiders" (non-Molokai residents). (1)

2. Conflicts between the users of SCUBA gear for inshore fishing and those who use other methods need some attention. The debate is over areas, seasons, species, etc. (1)

3. Conflicts between fishermen and other users of the inshore waters need to be resolved. (1)

4. Conflicts between commercial fishermen, sport fishermen, and others need to be worked out. (2,3,4)

5. Aku and akule are both fished by commercial and recreational fishermen. Their methods are different, and their needs and uses of the resources are different. Quite often, conflict occurs between the two. There are no regulations that say which group has a right, or what kind of courtesies should be shown by either group. This results in a bad situation -- one where there should be some effort at a compromise. (4)

6. "The Congress of the Hawaiian People support the aboriginal fishing rights and claims of the native Hawaiians. This Organization upholds that the National Fisheries Plan must include these aboriginal fishing rights and claims. Funded programs intended to identify and delineate aboriginal right and claims of the native Hawaiians is recommended and will be supported by the Congress of the Hawaiian People. In addition, the Congress of the Hawaiian People request that a member of this organization be a representative on the National Commission that will formulate national and state policies in the National Fisheries Plan." (4) (Refer to appendices)

7. The fishermen from different islands want some form of preference for fishing around "their" island. (1,4,5)

8. As an overall guideline, perhaps some of the ideas in the old Konohiki system should be incorporated in the management and allocation plans for inshore species. This means fishing rights to specific areas. (5,6)

9. There is a feeling that oio should be reserved entirely for sports fishermen, and that the marketing channels can not handle large quantities of oio. (5)

10. There are still outstanding claims for damage to the fishermen on Kauai that stem from W.W. II. These should be settled. (5)

11. Ideas that relate to resource allocation include:

a. Only commercial fishermen should use nets

b. Competative fishing tournaments should be discouraged

c. Areas should be reserved for pole fishing only

d. Netting for nehu should not catch other species

e. Recreational and charter fishermen should have licenses

f. There should be a limit on the number of charter fishermen

g. There should be a one-day salt water fishing license for visitors as in other states

h. There should be limits set on catches of recreational and charter fishermen

(6)

12. Laws, regulations, and licenses should not discriminate against part-time fishermen. (5,6)

Editorial Summary:

As a basic premise, the participants felt that the state and national fisheries plans should incorporate provisions for resource allocation. These should be subject to periodic review and change and they should have a system of licenses and other charges for users with special privileges.

The citizens of Hawaii think that our heritage from the days of old Hawaii has some potential to solve not only our own problems, but the same logic might also be applied to allocation problems in other areas. At the heart of this is the concept of the "Konohiki." Essentially, a Konohiki went one step beyond prudent harvesting regulations in that specific sections of the inshore environment were reserved for and managed by a specific group of people. This meant that the group could manage these fisheries resources as if they were private property, rather than common property. It is well recognized that greater long-term care and benefits accrue from this sort of system. Given this heritage, many of our fishermen felt that some modern version of this concept needs to be at the heart of any plan to allocate the fisheries of Hawaii.

Many felt that some form of geographical preference should be given to the fishermen of a particular locality as opposed to fishermen from outside that locality although within the same county. These preferences could be reflected in license fees, regulating governing seasons, methods, and catch limits, as well as marketing controls. While this essentially is a local matter, interagency cooperation and new management information may be key ingredients.

Another idea came from the Congress of the Hawaiian People "...which supports the aboriginal fishing rights and claims of the native Hawaiians. This Organization upholds that the National Fisheries Plan must include these aboriginal fishing rights and claims. Funded programs intended to identify and delineate aboriginal right and claims of the native Hawaiians is recommended and will be supported by the Congress of the Hawaiian People. In addition, the Congress of the Hawaiian People request that a member of this organization be a representative on the National Commission that will formulate national and state policies in the National Fisheries Plan." (See also a prepared statement by Mrs. Alma Kaima Cooper in the appendices.)

The expected differences between commercial and recreational fishermen were brought out. Among commercial fishermen, there are different ideas on allocation as there are among recreational fishermen. Nets, competitive fishing, size limits, catch limits, charter fishing, and the like were all mentioned as potential points for consideration.

It was felt that where one group of fishermen is favored over another, such as with specially reserved resources as bait, turtles, and other stocks, there should be an extra fee paid for that privilege. The participants felt that the proceeds from systems which allocated fisheries resources should be used to support the management and research programs.

On the grounds of damaging either the commercial industry and/or the fishery resources, special considerations for part-time commercial fishermen as compared with full-time commercial fishermen were opposed, as were significant differences in allowable gear for home consumption vis-a-vis commercial fishing.

Issue 7. Develop Alternative Means of Funding Fisheries Programs

Meeting Participants' Comments:

1. Marine resources management needs more support. (1)

2. Outside funding might be sought from private foundations and corporations. (1)

3. Expensive licenses should not be used to generate management because of the impact on low-income fishermen. (1)

4. Dollars from licenses and fees should go directly into Fish & Game, and other management/research programs. (2,6)

5. Funding sources for work on marine resources should include more money from local sources (State, etc.). Also, there may be some possibilities of using funds from the federal Government, such as Dingell-Johnson money, for rights-of-way, and so on. (5)

6. Money for research management, and enforcement, will have to come from all of us in the form of taxes and licenses. (6)

7. Sports fishing should be licensed. Tourists and other occasional fishermen should have "three-day licenses". (6)

8. Fishermen who catch large volumes of fish should buy licenses. (Pay more than others?) (6)

Editorial Summary:

To help meet the need for more money, the participants generally felt that several sources of funds should be created. One way would be through fees for licenses of different sorts. This includes sports fishing (which does not now have a required license) as well as commercial licenses. Another source may be the State Legislature in the form of direct appropriations. It was also felt that the federal government could be expected to change and strengthen some of the fisheries-related programs. The most promising may be through cooperative programs between state and federal governments. There was also some hope for private foundation support.

Whatever the funding source, many of the participants expressed the view that closer and continued contact with the various fishing interests

was essential for a successful program. Part of the concern in this area is that for some time now, there has been a serious lack of communication among agencies and between the agencies and the clientele they are supposed to be serving. The general result has been poor coordination of projects which were less than exciting from the point of view of the various fishing interests. The models which kept coming up at these discussions were the Japanese and Russian systems with their apparent very close working relationships. Fishermen in Hawaii don't think that they get the same service. Of course, part of the problem is also that the various agencies have not had the sort of informational and education programs that would help explain some of the reasons for the sorts of activities they engage in.

Issue 8. Improve Environmental Decision Making

Meeting Participants' Comments:

1. The environmental impact (known or supposed, as well as unknown) of cane wastes needs more attention. Processes that aid in the recovry of offshore areas should be utilized. (4)

2. Soil erosion is of special concern. The impact, as well as control measures, need wider study and more public awareness. (4)

3. There is a concern over the environmental impact of manganese mining when and if it should occur. (4)

4. Environmental decision making needs better information, processes, and procedures. (5,6)

5. It was felt that the strong lights shown on the water at night by hotels, restaraunts, and the like, affect surf-casting. (5)

6. There is concern for the impact that the proposed thermal-gradient power plant will have on the biota at Keahole Point. Monitoring work needs to be done. (6)

7. Kaneohe Bay and Pearl Harbor needs to be cleaned up. (6)

8. Sewage should be taken further to sea and dispersed in a productive way. (6)

9. Returnable beer bottles and other incentives that keep the environment clean by recycling waste materials would help. (6)

10. Education programs are needed to put environmental information before the public. (6)

11. Coastal water quality standards should be set, and citizens have some real recourse when these standards are violated. (6)

12. We need better assessment of the environmental impact of Federal and State projects. (6)